

THE CLAIMS

What is claimed is:

1. A method comprising:

forming a solution containing anthracene; and

irradiating said solution with visible light of a wavelength and of an intensity to establish

a pH change in said solution.

2. The method of claim 1 in which said anthracene is in its protonated form.

3. A method according to claim 2 in which said anthracene is excited to emit phosphorescence.

4. An apparatus comprising:

a solution containing anthracene; and

a source of visible light

in which said source of visible light is used to irradiate said solution at a wavelength and of an

intensity to establish a pH change in said solution.

5. The apparatus of claim 4 in which said anthracene is in its protonated form.

6. The apparatus of claim 5 in which said anthracene is excited to emit phosphorescence.

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1 An apparatus comprising:

2 a solution containing anthracene;

3 a polymer disposed in said solution, said polymer having the characteristic of changing  
4 its volume in response to a change in pH; and

5 a source of visible light for irradiating said solution with light of a wavelength and of an  
6 intensity to establish a pH change in said solution so that when said solution is irradiated with  
7 said visible light said polymer undergoes a change in volume.

8. The apparatus of claim 7 in which said polymer is a polyelectrolyte fiber.

9. The apparatus of claim 8 in which said polyelectrolyte fiber is polyacrylic acid-polyvinyl  
alcohol (PAA-PVA).

10. The apparatus of claim 9 in which said pH change in said solution is within plus or minus 1  
pH value of a null point pH value of said polyelectrolyte fiber.

11. The apparatus of claim 7 in which said polymer is a polymer gel.

12. The apparatus of claim 11 in which said polymer gel is an acrylamide gel.

13. The apparatus of claim 12 in which said pH change in said solution is within plus or minus

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2 1 pH value of a null point pH value of said polymer gel.

1 14. The apparatus of claim 7 in which said anthracene is in its protonated form.

1 15. A method comprising:

2 forming a solution containing anthracene;

3 disposing a polymer in said solution, said polymer having the characteristic of changing

4 its volume in response to a change in pH; and

5 irradiating said solution with a source of visible light of a wavelength and of an intensity

6 to establish a pH change in said solution so that said polymer undergoes a change in volume in

7 response to said pH change.

1 16. The method of claim 15 in which said polymer is a polyelectrolyte fiber.

1 17. The method of claim 16 in which said polyelectrolyte fiber is polyacrylic acid-polyvinyl

2 alcohol (PAA-PVA).

1 18. The method of claim 17 in which said pH change in said solution is within plus or minus 1

2 pH value of a null point pH value of said polyelectrolyte fiber.

1 19. The method of claim 15 in which said polymer is a polymer gel.

1 20. The method of claim 19 in which said polymer gel is an acrylamide gel.

1 21. The method of claim 20 in which said pH change in said solution is within plus or minus 1  
2 pH value of a null point pH value of said polymer gel.

1 22. The method of claim 15 in which said anthracene is in its protonated form.

23. A method comprising:

forming a solution of a compound that exhibits a change in pH upon irradiation with  
visible light; and

changing said pH in said solution by irradiating said compound with said visible light so  
that said compound is elevated from a ground state energy level to a higher singlet state energy  
level to a triplet state energy level.

1 24. A method according to claim 23 in which said pH change exists for at least one millisecond.

1 25. A method according to claim 24 in which said compound is anthracene.

1 26. A method according to claim 25 in which said anthracene is in its protonated form.

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